Announcement for Bachelor/Master Thesis, Research Project

Autonomous driving of heavy-duty vehicles

Motivation

Heavy-duty vehicles typically operate in rough, uneven terrain, exposing themself to the risk of sliding. While this risk is manageable in open fields, the environments often feature obstacles such as rocks, trees or other vehicles. Further challenges to the control and planning algorithms arise from the diverse vehicle configurations and the uncertainties stemming from both sensors and actuators. Since the vehicles typically execute repetitive tasks, machine learning techniques can be applied to acquire knowledge about the system and its environment and enhance the control behaviour over successive courses.

IPG TruckMaker

Task description

The specific subject will be worked out together in a personal meeting. Topics are possible in the following fields:

- Consideration of obstacles in planning and control
- Consideration of slipping behavior in planning and control
- State estimation
- Machine learning in repetitive processes and environments

Requirements

Experience in Matlab programming and basic control theory knowledge (e.g. from the lectures Regelungstechnik A/B or Dynamical Systems and Control) is required. Depending on your specific topic, further requirements may arise.

Contact

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